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## Neoliberal Politics of Resource Extraction: Moroccan Argan Oil

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This article addresses the intertwining and co-production of normative and technological strands in the politics of natural resource extraction. It explores how the integration of a forest resource in the global economy by means of normative and technological appropriation is associated with the delegation of responsibility for its conservation and the sustainability of its extraction management to local-use rights holders. In the process, such entanglements involve the commodification of a local staple as a niche product exploitable on a global scale. The transformation of the access rights of local people into responsibilities is addressed as an implicit form of 'de facto soft land and resource grabbing' (e.g. Zoomers 2010; Sassen 2013; Seufert 2013). This article aims to contribute to the ongoing debate around forms of 'accumulation by dispossession' (Harvey 2003; Kelly 2011; Corson 2011). The specific case study involves the emergence of argan oil on the world market.

**Keywords:** Morocco; argan oil; reforestation; resource grab; dispossession; law; science and technology

### Introduction

Argan oil is the world's most expensive nutritional oil. It is lauded for its distinctive nutty flavors and has found its way into the rarified circles of high-end cuisine. The oil is also popular in the pharmaceutical and cosmetic industries. It is processed from the fruits of the argan tree, which is endemic to southwest Morocco and forms a unique forest ecosystem. With regard to the politics of reforestation, this article analyzes how configurations of inventories of knowledge, legal repertoires and technologies have combined in response to a variety of requirements necessary for a profitable global commodification: the divestment of rights of the local population; the securing of a continuous provision of the base product from its source; and the association of argan oil with the economy of solidarity and equity as a fair-traded, certified and protected eco-organic niche and health product.

This article navigates the various layers of entanglements of law, science, technology and knowledge regimes and explores how this interconnectedness materializes to transform the natural resource itself. First, certain aspects of these basic layers are

introduced, which together exhibit characteristics of a neoliberal resource design: the normative framing of the resource, the formation of production cooperatives as an appropriate model for an ‘integrated resource exploitation scheme’ and the setup of an overarching infrastructural design for extraction. Second, some of the central features of normative, technological and knowledge-driven co-developments are outlined. Reforestation is presented as a typical arena of contention, where law, technology and competing sets of knowledge interact. Third, an analytical approach to the interface of law, science and technology and its importance for legitimizing transnational processes of appropriation is explored. In the concluding section, the main findings of the depicted entanglements are summarized.<sup>1</sup>

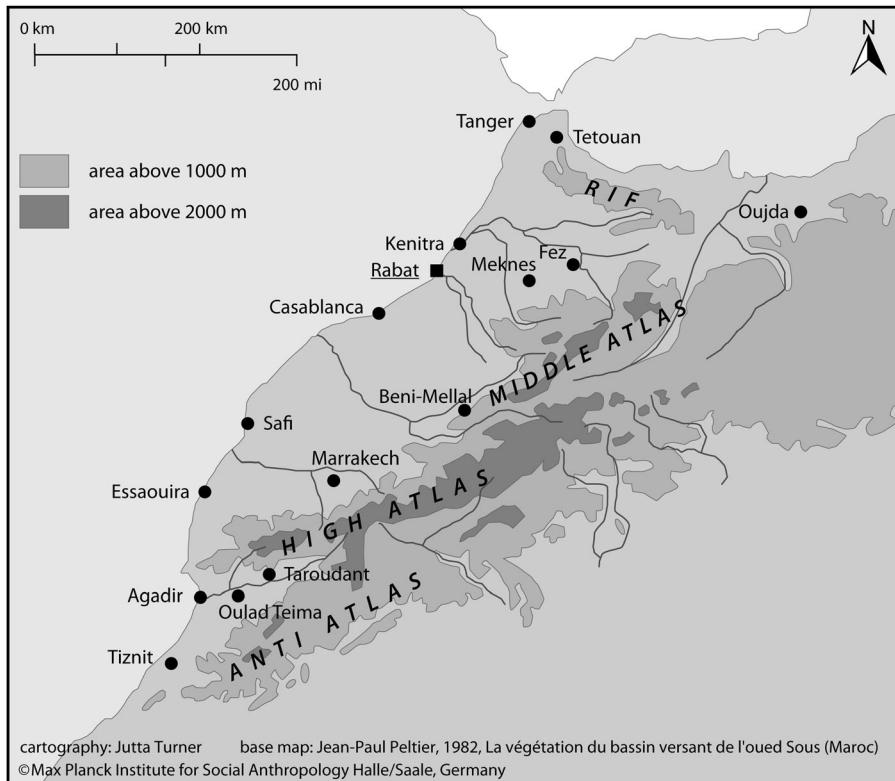
## Entanglements

### *Argan forest*

The natural resource under consideration is the argan forest (*arganeraie*) in southwest Morocco (Figures 1 and 2). It is an unparalleled ecosystem formed by the emblematic tree of the region (*Argania spinosa* (L.) Skeels), an endemic relic of the Tertiary period. In this semi-arid region, these trees make up the only forests that are able to stem progressive desertification. Comprising an agricultural landscape, the argan forest provides the essential means of livelihood for large portions of the local population (Lybbert et al., 2009). Sylvo-pastoralism, the collection of argan fruit for oil production, the rain-fed cultivation of cereals and, in recent times, irrigated cash crop production are the main activities taking place in the forest (Bouchelkha ca, 2001; El Aich et al., 2005; Marselles Culleres, 2003; M’Hirit et al., 1998; Nouaim, 2005). Due to human intervention, the forest’s dispersal area has significantly decreased over time, especially since the introduction of the irrigated cash crop production of vegetables and citrus fruits in the region during the Protectorate era in the 1940s. The forest has thus been exposed to anthropogenic impact, and its natural undergrowth has almost disappeared. The forest stand is in itself highly diversified, which to an extent is the result of human resource management. Argan oil, together with barley flats, was once the staple food of the local Arab and Berber populations. As recently as 15 years ago there was almost no commercialization of this oil outside of Morocco, whereas currently it is available in cities throughout the industrialized world.

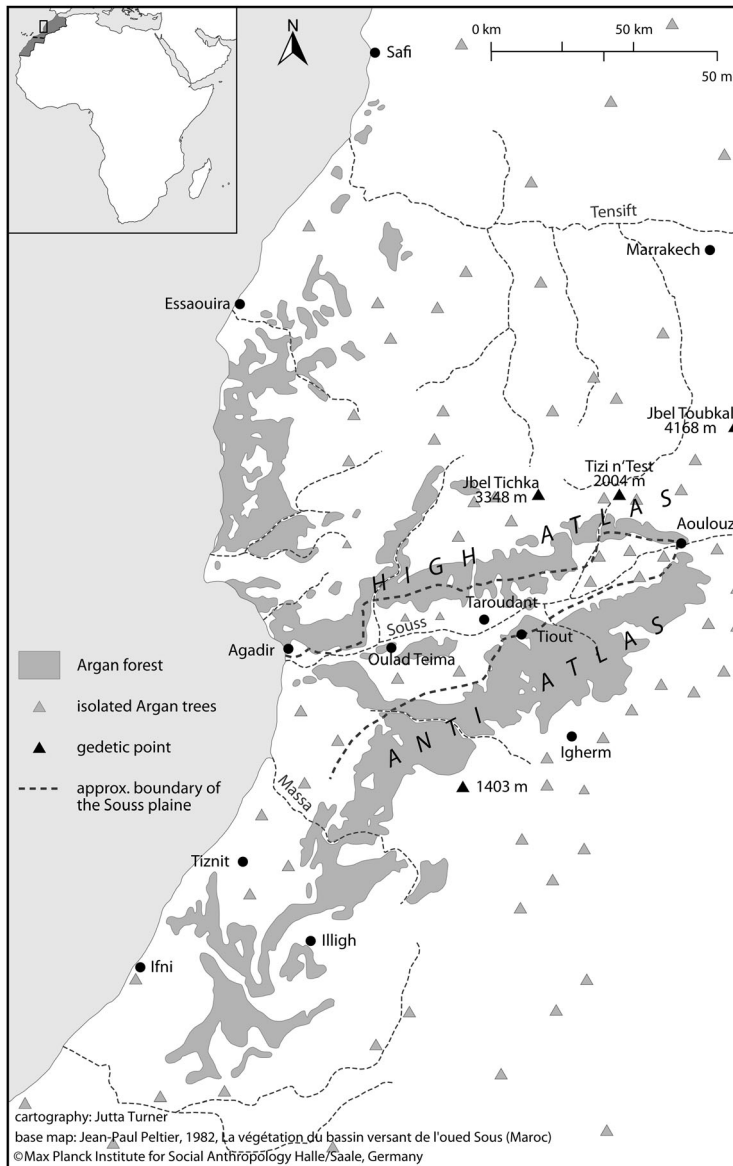
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<sup>1</sup>The people and places referred to in this article have been kept anonymous. Fieldwork on the neoliberal politics of resource extraction and on local access to natural resources and rural property regimes was carried out for several weeks each year between 1996 and 2005, in 2010 and in 2011. Data from different settings and specific constellations on the Souss plain are included in the analysis. From 2001 to 2010, the fieldwork was part of a project on ‘Sustainable Development and Exploitation of Natural Resources, Legal Pluralism, and Transnational Law in the “Arganeraie” Biosphere Reserve’ within the ‘Project Group Legal Pluralism’ at the Max Planck Institute for Social Anthropology in Halle/Saale, Germany. Since 2010 I have continued my related work within MPI’s more recently constituted Department of Law & Anthropology.

**Figure 1: The Souss region in southwest Morocco**

Simply stated, two contemporaneous and interactive trends have led to the integration of the forest and its oil into the global economy. Towards the end of the 1980s argan began to be considered by bioprospectors as a possible source of new biological substances, the properties of which promised profitable commercialization of new products, a process that has been widely described as aligned with the logic of neoliberal appropriation (Kelly, 2011). Roughly at the same time, while a spirit of optimism reigned following the United Nations Earth Summit in Rio de Janeiro in 1992 and after the passing of the UN International Convention on Biological Diversity (CBD, United Nations, 1992), the argan forest was identified as an ideal field of experimentation with regard to nature conservation, in connection with sustainability and such development goals as poverty alleviation, education and gender mainstreaming, particularly the empowerment of rural women. Taken together, these trends resulted in an invasion by assorted organizations promoting development cooperation and by global governance institutions (Turner, 2006; 2009). Although at first glance these interveners appeared to pursue different and sometimes seemingly incompatible agendas, the emergent picture was one of the frictionless and expedient interaction of normative, technological and scientific inputs centered around the establishment of a new extraction scheme.

Figure 2: Argan forest area



### Legal framework

The local population in those villages scattered throughout the agrarian and forest landscape has held common and individual usufruct and access rights to commonly shared and/or individually defined plots in the forest. From 1917 onwards, under Protectorate conditions, all forest areas were declared the domain of the state, and national legislation regulating the use of the forest in Morocco was enacted. Additionally, a special legislation was instituted for the *arganeraie*, wherein significantly

more extensive access and usufruct rights were granted to the local population in the argan zone than was the case with Moroccan forest areas in general (Agroforest, 1997; Chaussod et al., 2005; MADR, 2001). Currently the argan tree and its oil are endowed with a normative framework that includes, in addition to other regulations:

- (a) the legal protection of the resource as a unique ecosystem, and its sustainable development in the form of a UNESCO Biosphere Reserve;
- (b) a legal concept that allows for a specific model of production of the premium product required by the world market;
- (c) the backing of property claims that derive from industrial research on marketable properties (Intellectual Property Rights; IPR); and
- (d) the legal labels of a fair-traded, eco or organic product with certifications and protected geographical indication (PGI).

Such framework positions argan oil in an economy of solidarity and equity, which also appeals to the consumer in the industrialized world. Moreover, this complex legal configuration materializes in co-occurrence with specific inventories of knowledge and technology. Together, they entail further normative and social consequences, affecting access and property rights and conditions of livelihood in general. The prerequisite for this normative framing of the product, I argue, is the introduction of a new mode of resource exploitation based on technological innovation. The latter involves additional normative templates that allow for the transformation of traditional modes of production. In this way traditional knowledge is translated into a marketable good. Such translation, however, implies the deprivation of local expertise and, at the same time, its external commercialization. In the case at issue here, it is the formation of production cooperatives that is accompanied by the invention of a new oil-extruding technology.

The legal and technological setting of the oil bonanza is embedded in a wider normative environment, directed at sustainable exploitation and conservation of the ecosystem. However, the consequences of the technological–legal embedding of argan oil seem to enhance development that appears to be mostly incompatible with the official legal policy, which claims to satisfy all of the stated development goals.

### ***Biosphere reserve***

One point of departure from which to unpack the complex debate on transnational law making on sustainability and nature conservation is the International CBD (CBD, United Nations, 1992), which went into effect in 1993 and has become the most widely accepted legal framework. Article One of the CBD stipulates three basic objectives: (1) the conservation of biodiversity, (2) the sustainable use of its components and (3) the fair and equitable sharing of the benefits arising out of the utilization of resources and knowledge, ‘including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources

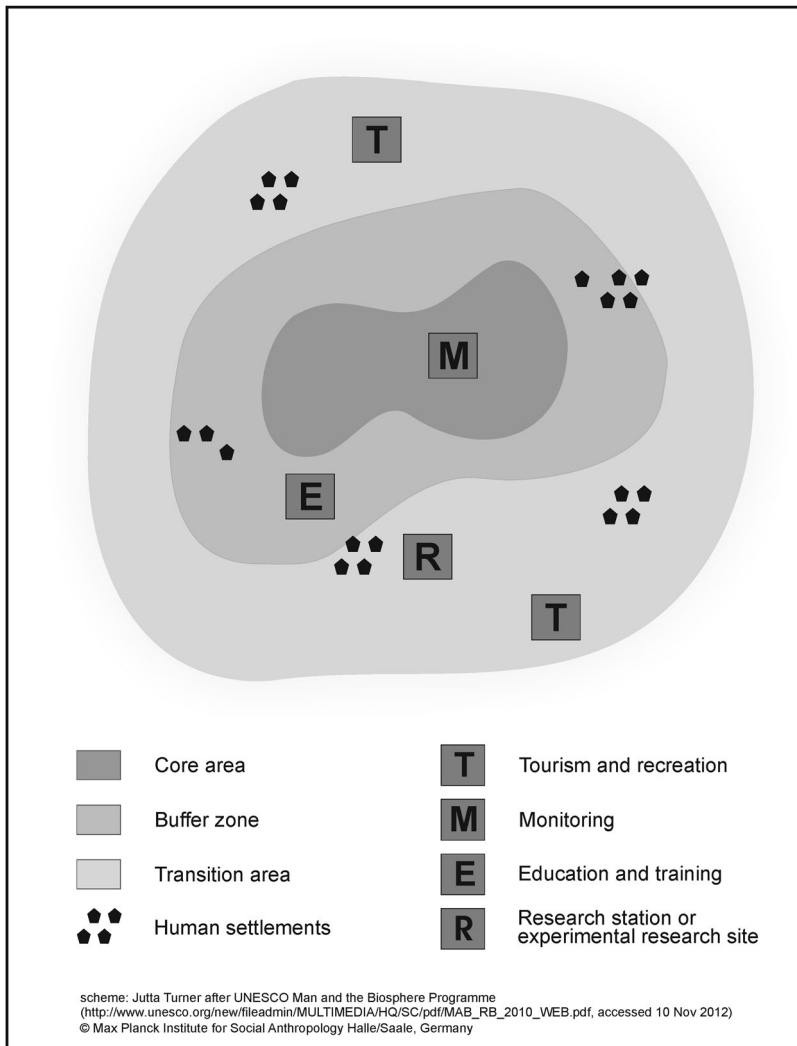
and to technologies, and by appropriate funding'. Benefit sharing should be expressly dedicated to compensate local communities as well as state and scientific institutions. Compensation may be conveyed in the form of financial means, sustainable development projects and even the acknowledgement of individual scientific contributions.

In the case of argan, the initial step to achieve such a transformative process was the integration of the resource into the global normative order and auditing system through the application of transnational legal templates. In 1998, the entire argan forest (*arganeraie*) was declared a UNESCO Biosphere Reserve (RBA, *Réserve Biosphere Arganeraie*; MADR, 2001). The state was the official nominee in conformity with the regulations of the UNESCO 'Man and the Biosphere' Programme (see HCEFLCD, 2009). But in fact, as in other cases (Corson, 2011), such approach was internally contentious, the application having originated through the intervention of transnational development agencies engaged in nature conservation and subsequently submitted despite the concerns of certain Moroccan state agents who worried about the long-term consequences and costs to the Moroccan state.

The UNESCO format 'Man and the Biosphere' has been evolving since the 1970s (Hanson, 2008). Its major objective is to establish the ecologically compatible and sustainable utilization of a specified natural area (Agroforest, 1997; El Fasskaoui, 2009; MADR, 2001). While the protection of a unique ecosystem is intended, at the same time an effort is made to ensure its sustainable exploitation, thus not withdrawing it completely from anthropogenic influence. Three basic objectives, pursued in tandem, are: (1) the protection of the environment and its biodiversity, (2) the encouragement of a sustainable economic development and (3) environmental education and the establishment of a research program and its integration into the global network (see also El Fasskaoui, 2009). Once such a reserve has been designated, assistance in carrying out scientific research and creating the necessary legal framework is urgently required from UNESCO in order to realize these aims (UNESCO, 1995–2012).

The division of the designated region into three zones takes these aims into account (Figure 3). The core zones are to be kept as free of human influence as possible. Their legal status resembles that of nature reserves, which means that the core zones are more strictly protected than national parks. In the buffer zones around the core areas, a concrete conception for the sustainable use of natural resources is to be worked out, sensitive to local conditions. In the transition zones, which enclose the buffer and core zones, the main emphasis is on regional development, with elements of sustainability that are intended to radiate to the other zones, in order to prevent overuse of the biosphere under protection. Taken together, the zoning of a biosphere reserve appears as the normative legitimation and translation of the concept of enclosure (Corson, 2011; Kelly, 2011). As will be shown, such variation takes into account the fact that private individuals and collectives hold usufruct rights on a resource that has been declared public property in the hands of the state. The main point here is that this normative framing challenges the full access and exploitation rights by local usufruct rights holders, at least in the designated core and buffer zones.

Figure 3: Biosphere reserve zoning scheme



After years of controversial debate among all partners involved in the argan project, the final report issued in 2001 designated 18 core zones, 12 of which have been designated ‘sites of biological and ecological interest’ (*Sites d’Intérêt Biologique et Écologique* SIBE; MADR, 2001).<sup>2</sup> Altogether they cover 17,000 ha of diverse ecological argan habitats. The surrounding buffer zones, including urban areas, amount to

<sup>2</sup>El Fasskaoui (2009), while failing to mention the fact that the zoning concept and the required legal protection have yet to become operative, indicates 26 SIBE, 14 representing the coastal area and 12 the continental area of the RBA. One of them is also designated as a natural park, which implies an overlapping of various and not necessarily compatible legislations.



560,000 ha, while the remainder of the biosphere reserve has been declared as a transitional zone (Naggar, 2010).

### *Cooperatives*

At this stage, with the integration of the forest into global conservation legislation being pursued, competitive interactions became apparent, as various transnational interveners prioritized contradictory interests, such as the support of cash crop production as an exploitation strategy of the post-independence rural elite that had antedated the oil bonanza for decades (Turner, 2009), camel raising by elite actors in the shadow of transnational conflict management (Turner, 2008a), relatively recent transnational security politics (Turner, 2008b) and finally the exploitation of argan oil. In the latter case, the idea to connect sustainability with all of the stated development goals allowed argan oil to emerge into view. Various actors asserted that argan oil, as a unique local commodity, had the potential to take its place in the competitive world market of niche products. At this point the organization of labor – that is, the transformation of local resource users into providers of a workforce as an essential component of the normative-technological scheme of resource exploitation – came into play. Such labor organization should exhibit conformity with rights-based standards claimed in the context of the stated development goals (cf. Kelly, 2011; Li, 2011).

According to the dominant narrative, basically two competing versions of a single organizational model of oil processing were introduced. This is the model of cooperative production propagated by all manner of global governance agents. It is put forth as an ideal concept that allows participation of equal and self-determined local rights holders in resource management and production, a quasi-globalization from below. Transnational governance institutions, among them UN organizations such as the Food and Agriculture Organization (FAO), International Labour Organization (ILO) and especially Committee for the Promotion and Advancement of Cooperatives (COPAC, 2008) as well as the World Bank and the International Monetary Fund, underscore the importance of cooperatives to socio-economic development and as an indispensable means in the fight against poverty. In addition the Moroccan state had established its own support governance institution, the ODCO (2010), as an interface for transnational cooperation. Both transnational and national institutions provide for legal regulation of the cooperative project. Moreover, the individual cooperatives are supposed to adhere to a particular set of rules regarding their organizational setup, the legal status of their members, the management and allocation of means and the correct use of the material with which they work, including a code of best practice stipulating the correct exercise of usufruct rights and necessary criteria of hygiene, shelf life, quality and marketability.

One approach, initiated by the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ; German Society for International Cooperation), aimed to

minimize interference with the traditional rural lifestyle and to combine the traditional method of oil processing and local knowledge with the principle of sustainability and modern commercial exploitation. This approach largely failed. Traditional argan oil production is a labor-intensive household process that involves women as independent producers. It consists of a sequence of procedures, beginning with the collection, drying and peeling of argan fruits. The remaining stones are manually opened and torrefied, followed by hand milling and processing of the oil cake. The complete oil processing method, similar to the management of the argan forest, is based on complex local inventories of knowledge. In order to correctly open the nuts, for instance, one has to discern their specific properties.

The GIZ concept of the cooperative model, based on this traditional practice, promoted the manufacture of oil on demand, relying on the raw materials of limited stocks from respective usufruct rights holders in the villages. Production on demand was necessary because the manufactured oil, which contains suspended particulates, has a relatively short shelf life. Eventually this format survived only marginally in the emerging argan oil industry. The organization of women's cooperatives at the village level stirred up gender tensions; the marketing union founded in order to manage the distribution of incoming orders to control quality, to coordinate production and to organize the payments proved unsuccessful. Currently a marketing model initiated by a Moroccan businessman ensures that at least a small market share remains with the village cooperatives that are producing manufactured oil (Nill and Böhnert, 2006).

The design of the second model is quite different. Moroccan activists, whose leading figures participate in bioprospecting, initiated the establishment of centrally located production sites by mobilizing funding from the usual counterparts in the donor community. A decisive characteristic of this version of cooperative production is mechanization. The oil production is based on electronic extruding machines and filtration installations, with the goal of obtaining purer oil with a much longer shelf life than the manufactured oil produced by the first model, and thus, it is argued, with greater appeal on the world market. Also, in contrast to the first model, there was no mobilization of the women/producers to unite; rather, the premises of the cooperatives were opened up to a wider potential workforce. The model turned out to be an amazing social success, which its initiators neither had planned nor expected. This type of cooperative offered completely new opportunities for disadvantaged women who had fallen outside the traditional social security net, such as divorced women, women living separated from their husbands, widows and single mothers. Also these cooperatives claimed to respect sustainability standards and to pursue the stated development goals.

Among the criteria that characterize this approach are the following. The technologization of production reduces the work performance of the women members of cooperatives to the monotonous cracking of argan nuts, while all other components of the process follow a different production logic. This gives the collective labor of women a certain piecework character. During the run-up to the formation of the cooperatives the initiators were already experimenting with all possible options for a

technologization of the oil processing (GERPE, 1995). Only the knowledge- and experience-based cracking technique of the women could not be replaced. The goal of opening the door to technical innovation was, so the narrative went, to spare the women the most laborious facets of the oil processing (Wiber and Turner, 2010). This line of argument, however, did not dispel the concerns some women voiced that technological innovation would continue, and eventually they might lose their new source of income the same way they had obtained it – through technological progress.

Another aspect of the model is that the mechanized cooperatives purchased the necessary raw material on the free market and thus turned the always existing regional trade of argan intermediary products into a boom business. The question of how such unrestricted and competitive purchase could remain tethered to sustainability was answered by reference to the fact that the cooperatives obliged their suppliers to comply with sustainability requirements and that all cooperatives, including the village cooperatives, agreed to invest a portion of their profit into reforestation measures.

A comparison of the two cooperative models reveals that the first seemed to meet the criteria of a balanced ecology but was competitive on the market only to a limited extent. The second, based on a market-oriented and technologized production, turned out, rather by chance, to be a social success, but handed over responsibility for sustainable resource management to the suppliers of the argan raw material. There is an indication that such an approach leads to conservation failure (Lybbert et al., 2011). Further, it shows in what way labor may be organized in connection with resource dispossession (cf. Li, 2011).

Moreover, with respect to the second model, the equipment of the mechanized cooperatives demanded external investment, maintenance and control. It is this technology transfer that required a concomitant implementation of a new legal model of labor organization that was seen in cooperatives. The advantages of this new model of production were, for instance, the establishment of monitored maintenance structures, the attraction of public global funding and the projected provision of the local population with a new source of income, thus meeting the expectations of benefit sharing since, according to this model, the local population assumed the position of the supplier on the world market. This also involves, however, that formerly independent producers lose their autonomy. In short, the implementation of the cooperative model was presented as a source of livelihood for rural women, thus contributing to their empowerment and reducing poverty. With its equipment and legal framing, however, the cooperative model also appeared to be more oriented toward the market and less concerned with the livelihood conditions of the actual cooperative members. All this was promoted as a paragon of reinvention of (positive) traditional models and continued development on the basis of conventional wisdom. Furthermore, the technologized cooperatives appeared qualified to accomplish something beyond the stated development goals; namely, to achieve the quality of argan oil required by the industry and bio-prospecting research.

It should be noted that the option of a technologized argan oil production aroused the interest of commercial entrepreneurs. They too purchase the raw product on the local market or conclude exclusive agreements with village communities for the provision of almonds prepared for processing. In addition, the new argan economy has inspired local creativity, and a wide variety of intermediate models of production have emerged, ranging from privately initiated traditional production to industrial oil factories. As a consequence of this diversification, competition on the local market with argan products has developed, and along with it a culture of intermediaries, bulk buyers and local adventurers who speculate on the ups and downs of supply and demand. Only due to pressure by global and national governance institutions was structural reform of the sector undertaken.

### ***Infrastructural design of the argan sector***

A vast number of actors with varying agendas are involved in the argan oil market, including women's rights organizations, nature conservation NGOs, organic food producers, cosmetic firms, the pharmaceutical industry, independent entrepreneurs, political actors and the development, donor and global governance juggernauts. In the early phase of the argan boom they combined to create a not even remotely comprehensible patchwork fabric, forming alliances and competitive relations in various configurations (Aboudrare et al., 2009). At the village level this web of interveners materialized in interactions with local representatives of government agencies such as forest administration and local political authorities on the one hand, and with village councils representing peasants and sharecroppers, male relatives of women working in cooperatives, adherents of Islamic movements and Moroccan development brokers on the other hand. It is within this trans-scalar web that entanglements of technology, knowledge production and law making emerge and are organized as co-production (Jasanoff, 2004) through a strategic coalition of trans-scalar networking actors. Such actors may accumulate a variety of functions and advocate for multiple interests, connecting through their personal engagement places, scales and decisional power. In the following discussion, only certain of those strands are outlined that connect the new extraction scheme with the logics of neoliberal resource optimization.

In order to link up cooperative production with the diverse expectations of potential customers, ranging from niche food connoisseurs to the pharmaceutical and cosmetic industries, cooperative marketing networks – known as GIEs (*Groupeement d'Intérêt Économique*; Economic Interest Groupings) – have been set up with the support of external partners, with a goal to construct an unbroken commodity chain in which all interest groups are united according to transnational standards. Interwoven into this chain are also national governance institutions. Without going into specifics here, after a long process the links of a complete chain were laid out – at least on paper.

At the bottom of the commodity chain, so to speak, appeared the *Association Provinciale des Ayants Droit Usagers de l'Arganeraie* (APADUA; Provincial Association

of Use Right Holders in the Arganeraie). The established structure thus far does not make explicit whether only members of APADUA will be allowed to sell raw material, meaning that all providers are bound to join and actively participate in this organization, or whether all actors who hold usufruct rights are automatically considered to be members. The driving force behind the formation of APADUA was apparently ANDZOA (*Agence Nationale de Développement des Zones Oasiennes et de l'Arganier*; National Agency for the Development of Oasis Zones and of the Argan Tree), the department for the administration of the UNESCO-acknowledged biosphere reserves that was established at the end of 2009. The latter in turn constitutes a subsection of the *Ministère de l'Agriculture et de la Pêche Maritime* (Ministry of Agriculture and Maritime Fishery; ANDZOA, 2013). The provincial associations are said to be eight in number and to be united in the federation FNADAUA (*Fédération Nationale des Associations Provinciales des Ayants Droit Usagers de l'Arganeraie*). Also mentioned among others is the *Association Professionnelle Marocaine des Sociétés de Producteurs d'Argan* (APMSPA; Moroccan Professional Association of Argan Producing Companies), which implies the integration of the entrepreneurial, industrial and cooperative sections of the argan economy. There also is the *Association Nationale des Commerçants et Utilisateurs de l'Huile d'Argan* (National Association of Argan Oil Merchants and Users), which apparently is intended to represent the final national link in the commodity chain that ends with the consumer in the industrialized countries. All of these new, and yet to be created, organizations have been expected to form an umbrella network and provide transparency to the argan business. Such an overarching organization came into being in April 2011 (Saber, 2011): the *Fédération Interprofessionnelle Marocaine dédiée à la filière d'Argan* (FIMArgan; Interprofessional Moroccan Federation Devoted to the Argan Sector). What is important to note is that the commodity chain is intended to be open to the input of all sorts of trading companies as well as the transnational cosmetic and pharmaceutical companies, but by virtue of the links in the chain to maintain a connection with the end consumer. Transnational corporations, furthermore, may interact with national and global governance institutions as well as with all the other links in the chain, and may need to cooperate with NGOs or other non-profit institutions to sponsor common initiatives. Such top-down investment can be presented by those transnational corporations as voluntary acceptance of corporate social and environmental responsibility.

### **Law, technology and market integration**

In this section, some of the most prominent legal avenues legitimizing the exploitation of local knowledge for the generation of protected scientific knowledge and allowing for the marketing of the newly created technology-based products are outlined. When the emphasis is placed on the economic aspect of the cooperative approach, argan oil processing may be regarded as an example of a 'market-based approach to biodiversity conservation for the benefit of local stakeholders', an approach that

depends on the successful creation of target markets (Lybbert et al., 2004; 2011). The high-end oil produced in cooperatives then serves as basic raw material for the industrial production of pharmaceutical, dermatological and cosmetic end products. Such products may contain argan oil as one of the ingredients or may be produced on the basis of detected and patented molecular argan properties. A prerequisite for the further industrial processing of argan was and is the establishment of a legal framework for quality assurance. Additional legal tools ensure that the modest influx of capital to the region is partially invested in the maintenance of the resource for the benefit of humanity.

This brief overview emphasizes the techno-legal components that have an effect on the issue of reforestation, which I have chosen in order to demonstrate the strategic intertwining of such tools and the social consequences they generate. Additionally, an entire legislative machinery was set in motion to provide a normative framework that allows the establishment of techno-legal standards for the production, marketability and guaranteed availability of argan as a niche product with a particular reputation. Such a normative framework is intended to guarantee quality, provenance and, as much as possible, biological purity.

### ***Quality and eco certification***

Quality and eco certification were guaranteed through those agencies that provide globally acknowledged certificates, labels or other forms of quality guarantees. A whole range of providers of certificates were ready to intervene, however, requiring quite considerable investment. Thus, at first, it was the commercial producers who held the edge over the cooperatives. Only with the support of the marketing associations were the cooperatives able to compete. A competition concerning labels broke out among the various providers of argan oil, the gist of which may be summarized thus: Who gets from whom the most valuable eco label, bio certificate or award for quality and/or as a social project; and for what price and through what concession?

### ***Protection of origin and ‘unique characteristics’***

The legal regulation of origin and its ‘unique characteristics’ according to protected geographical indications (PGIs) rounds out the framework (Correa, 2010; Gangjee, 2012). It is a legal regulation that is compatible with the CBD and warrants the protection of a commodity that is uniquely produced in a defined geographical area based on local intellectual property rights. So this normative layer comprises notions of property rights, including the claim to protect local knowledge. This legal tool involves widening the focus from the determination of product quality solely according to technological, ‘scientific’ control measures to include both their (a) spatial and (b) intellectual, cultural and social boundedness. The PGI also guarantees traceability in global commodity chains. The expectation is that the label will also contribute to

the protection of the producers' collective rights and traditional knowledge. The protected good is hence defined as 'hav[ing] patrimonial values that belong to no one in particular' (Larson, 2010). The respective Moroccan organizations fighting for PGIs successively joined the international network for international PGIs, oriGIn (Organization for an International Geographical Indications Network; oriGIn, 2010). Interestingly the PGI certifies argan oil as a regional specialty exclusively produced in the Moroccan southwest, a qualification that seemingly should exclude production in factories outside the region.

### ***Certifying fairness and transparency***

In contrast to PGIs, certifications of fairness and transparency allowed cooperatives to distinguish themselves from the commercial oil factories. This labeling supports accessing the market through claims of equity and solidarity. AlterEco and Max Havelaar, among the most established certifiers in this segment, have included argan oil products in their ambit (Alter Eco, 2011). Nowadays issuers of labels and certificates offer new products on the service industries market that combine fair-trade certification with eco certification, which appears to provide some savings for the cooperative client. Ecocert is among those becoming active with multiple qualifications on the argan market (Launay, 2010). Under the single signet ESR (*équitable, solidaire, responsable* [equal, solidary, responsible]) Ecocert qualifies products that fulfill the four criteria of social compatibility, equity, ecology and transparency. It has expanded its range of services and seeks to place its products on a wider market to compete with other providers who only certify a single criterion.

### ***Protecting properties and the marketing of 'scientific findings'***

A particular body of normative regulations regarding the maximal use of the resource points to a further dimension of property: the legal protection of claims to those properties and characteristics of argan that have been identified through molecular and genetic research and knowledge production. Two strands stand out in this field, and while they seem to be connected to the normative production of different property regimes and to tap differing streams of profit making, they may nonetheless converge when considered from a technological perspective. One strand researches the molecular improvement of argan seeds with the intention of transforming argan into an optimized crop through the selection of genotypes displaying the desired properties in significant quality and greater quantity (Ait Aabd et al., 2010; Bellefontaine, 2010). The second strand looks to identify molecular and genetic properties that can be used in industrial pharmaceutical and cosmetic production. Both strands stand in specific relation to local wisdom on argan. While the first is exemplified with respect to reforestation, and will be discussed in the following section, I omit the second strand, as it represents a development occurring outside of natural resource extraction.



## Reforestation

Integral to the combined normative, scientific and technological approach meant to assure the sustainable, conservation-sensitive and socially compatible extraction scheme has been the concept of reforestation. Moreover, as I argue, this approach seems suited for securing the key source of raw material. It seeks to achieve two goals at once: to constrain the agency of local usufruct rights holders and to legally gain control over the resource, a development predetermined by the normative impact of the UNESCO Biosphere Reserve scheme. Before analyzing the ambitious reforestation efforts in the argan forest from the perspective of law, science and technology entanglements, it is necessary to critically address the overall leading narrative. This narrative states that first, the forest is a unique natural ecosystem that is in its core areas unaffected by human impact and, second, outside of those areas there is the problem of lack of natural reproduction of the forest, the latter constituting a cultural landscape (MADR, 2001).

Against this background is set the vision of a possible scientific optimization of a species that apparently had been affected by human impact at least during the period for which data is available. Research is needed – according to the vision’s message – in order to transform argan into a real crop tree that can be used for plantations and can be planted in areas with scant vegetation as a source of income for a local population (Nouaim, 2005).

Details must be added to this dominant narrative. First, natural reproduction is rare and indeed not sufficient to maintain forest stands. Second, this does not mean that natural reproduction is unknown or cannot be observed, but that the necessary natural conditions are not present in areas of human intervention. Third, local users are familiar with this phenomenon and have developed a normative-technological inventory to cope with it. As to the specifics of local forest tending, customary law stipulated closed seasons, the protection of wild grown saplings, rules for fruit collection, the establishment of closed zones, the diversification of use and extraction, and much more. Local usufruct rights holders refer to traditional and ‘modern’ irrigation technologies adapted to local circumstances, such as the practice of ‘captive breeding’ at home and other means in order to protect the resource despite the ongoing overexploitation for which they are in part responsible (Lybbert et al., 2011).

The various transnational reforestation programs, however, refer to a variety of scientific approaches and blueprints of project laws (Weilenmann, 2005). What such programs have in common is that they widely ignored the opportunity to explore how one could best profit from local knowledge in the field (in contrast, it should be noted, to their attentiveness to local knowledge when it relates to exploitation opportunities). Instead, they focused on experiments in the scientific laboratory and the search for technological solutions. Experts in agroforestry charged with the elaboration of a project plan emphasized that former conservation attempts had completely failed. They attributed the failure to deficiencies in scientific knowledge. Already in an FAO expert’s report of 1978, reforestation programs for the *arganeraie* were declared



illusory due to the lack of basic scientific data, and the former initiatives promoted by the French Protectorate government in the 1940s were deemed ineffective for the same reasons (Chaussod in GERPE 1995; Tarrier and Benzyane, 2003).

In 1996 a scientific research project was launched for the production of saplings in state-sponsored (later to be privately run) tree nurseries, at the beginning with quite poor results, while at the same time villagers were successfully producing resistant saplings. Attempts to resolve the problem, such as testing and the search for plant diseases that might be to blame, devoured vast sums of development money. It took years for the subsidized professional nurseries to attain an equal footing with the locals regarding practical knowledge. Then those same nurseries, by selling the saplings that they had been funded by research organizations to raise, gained yet another source of income. However, the next challenge soon presented itself – transplanting the saplings ‘in the wild’. In fact the official reforestation programs displayed remarkably low success rates at that time. Research was intensified, and grants increased, in order to cultivate varieties that could tolerate the shift from nursery to destination.<sup>3</sup> Between 1998 and 2000 the researchers announced they had taken important steps toward successful transplantation.

In effect it appears, at least to an extent, that the intensive research in tree growing was most successful in resolving problems that the research nurseries themselves had generated and that local villagers had never experienced. An array of such problems is connected to this technological solution that cannot be normatively balanced. Argan trees are, for instance, locally adapted to micro-conditionalities. The nurseries are unable to reproduce this extreme variety. On the contrary – and this is the crucial point – they are expected to produce homogeneity. Research was oriented toward identifying and pursuing only those of the tree’s domesticated properties that would combine the best possible yield of easily crackable kernels, containing the maximal quantity of oil, with the highest resistance against drought. Nouaim and others argue that to achieve genetic optimization in line with the demands of local usufruct rights holders, it must be shown that the genetic research is beneficial both locally and to transnational donors. While on the one hand biodiversity had been emphasized in the tree nurseries, on the other hand in the early 1990s the search for the optimal tree, the ‘argan tree plus’ to accommodate reforestation measures, was announced (Bellefontaine, 2010; Nouaim, 2005). Scientists compare the argan tree in this respect to other species such as citrus or almond trees. Research in this sector is strongly supported by industrial agents – and represented as a contribution to the enterprises’ corporate social responsibility programs. For example, the cosmetic firm L’Oréal, in cooperation with UNESCO, runs the program ‘For Women in Science’. Within this framework a young Moroccan researcher is funded to seek out a more resistant variety (L’Oréal, 2009).

An integral part of the ambitious agenda is apparently a competitive dynamic that is connected to the PGI and protective legislation in general. The announcement by the

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<sup>3</sup>INRA (2013) provides a good overview of the state of the art in this regard.

Israeli company Sivan to have developed an optimized argan ‘super strain’ called ‘Argan 100’ has led to emotional reactions within the Moroccan scientific argan community and their industrial counterparts (NoCamels, 2012). Again, the lack of legal protection of argan as an exclusive Moroccan resource was deplored. The argument was brought forth that now others are enabled to make profits from argan which is actually due to the poor local usufruct holders.

While one vein in the literature examines the interconnectedness of local poverty with biodiversity conservation, without factoring in the consequences of standardizing reforestation for biodiversity and the creeping disenfranchisement of local usufruct rights holders (e.g. Lybbert et al., 2011), many others contend that the optimization doctrine would mean the end of biodiversity (Simenel et al., 2009). How reforestation projects would then fit in with the maintenance of the extreme local genetic variability was answered with reference to the establishment of protected areas. All of this seems far removed from the reality of differentiated tree-caring methods with which the locals are familiar (Genin and Simenel, 2011).

As one might expect, the reforestation program in its initial phase was a source of endless dispute among the various actors involved. Cooperative members who were legally bound by cooperative rules to invest in reforestation quite often asserted that they were wasting cooperative capital on reforestation measures they regarded as condemned to failure. At that time members insisted that since they were financing, or at least co-financing, the reforestation, they deserved a voice in the planning, particularly regarding the selection of the areas. However, when the first reforestation measures were planned, literally no one in the villages involved was willing to place his/her own plot at the disposal of the reforestation program for fear of giving away their usufruct rights in perpetuity.

A crucial drawback in the approach is attributed to the primary legal problem, which can be enshrined in two persistent and pending questions: first, where is forest and where not and, second, where there is forest, who actually is entitled to manage it? The problem features several dimensions, but is rooted in the issue of the legally defined forest that is owned by the state. This legal status may apply to areas with trees on them – in plain language, real forest – but also to deforested areas without any trees that are currently used for various purposes. Nevertheless, such areas may still figure as state-owned domain and underlie various kinds of usufruct rights. Apart from that, one could also imagine the existence of land with ‘forest’ trees on it but legally classified as something other than forest. Such land indeed exists.

The legal problem lies in the inclination of forest administrators to declare that wherever there are trees – except for crop trees such as citrus trees – it is by definition state land. Landowners appear to be helpless against such state interference when their land is not officially registered. It is this situation of legal insecurity that poses a real problem to the reforestation idea as developed in the offices of transnational project designers. Without going into the specifics of Moroccan forest law, I argue that reforestation measures have contributed to tenure insecurity.

The other crucial problem is that reforestation challenges local usufruct rights in such state-owned forest. These rights, even where they are individual and inheritable, are withdrawn in case of a reforestation project or suspended for a decade. This means that not only fruit collection is prohibited but also agriculture and livestock pasture.

In the meantime the situation is exacerbated because scientists suggest a transformation of argan into a mere crop tree and an extension of argan planting into areas with poor vegetation. Researchers have recommended socializing the argan tree in plantations with other profitable species, in which case the differentiation between argan trees in plantations and in actual forest fades away. There are also suggestions to enhance the natural undergrowth with more productive species. This would entail that argan exists in two different formations – as forests and as plantations – and each of these areas would have different legal statuses. Argan trees on agrarian land then could be classified either as individual private property or as commons, which is to say the collective property of a village community. However, as of now, a desire among villagers to receive state support for the planting of argan trees on private land appears rather difficult to imagine.

It took years until a concept for the temporal redemption of usufruct rights was integrated in the reforestation program. Nevertheless there were sufficient reasons to suspect that state representatives intended to directly profit from such regulations and that previously mentioned local user federations, APADUA, had been created for that purpose. The revised program pursued more concretely the ways in which local actors should be directly involved in conservation measures and assume responsibility for the protection of the forest zone from which they benefit. Given the imposition of closed seasons for reforested areas, which in effect prohibited the exercise of usufruct rights for an extended period, the involvement of the local population in the reforestation measures gained momentum as a means to grant an intermediary source of income.

Optimists proceeded on the assumption that the legal and emotional impediments to reforestation could be overcome (Chaussod et al., 2005; Nouaim, 2005). The national decennial program for the period 2005–2014 intended to protect more than 116,000 ha by registration [!] and more than 114,000 by conservancy measures. It is hard to verify the data on reforested areas. Some sources indicate that for the period between 2003 and 2008 a new [!] area of 1294 ha had been planted with trees and thus transformed into forest-plantation, which amounted to 212,000 new argan trees (Mdidech, 2010). A wide array of institutions and associations contribute to reforestation measures. Some do so in collaboration with the cooperatives or with oil producers of various backgrounds, some cooperate with local CSOs and village councils. It seems plausible that the total reforested surface was about 7000 ha in 2008/2009, including the tree nurseries, while at the same time some 9000 ha were lost to officially acknowledged projects in tourism or road construction (Raimbeau, 2009; see also Charrouf and Guillaume, 2009). The national forest administration announced in its 10-year plan (2005–2014) to restore existing forest areas or set out new forest on 4000 ha annually (<http://www.eauxetforets.gov.ma>).

Taken together, this leads to the conclusion that large-scale reforestation measures with a tree optimized for oil production will sustainably transform the argan woodlands. In this respect the above-outlined model of biosphere zoning of the UNESCO 'Man and the Biosphere' Programme shows remarkable compliance with the exigencies of neo-liberal politics of resource extraction. The translation of the MAB zoning model accordingly reads as follows: The core zones are considered to serve as genetic reservoirs and preserve genetic variability for future research. The buffer zones around the core zones are expected to eventually be transformed into large plantations based on the introduction of the 'tree plus' as an optimized deliverer of the source product. This tree is supposed to provide the raw material for the transnational commercial and industrial processing in sufficient quantities. The transitional zones provide the necessary infrastructure to connect the natural resource with the places of its products' transformation (Nouaim, 2005; see also Afoulous, 2010).

In sum, there are good reasons to assume that the involvement of local stakeholders in the reforestation program does more than provide intermediate revenue. Tenure insecurity persists while access rights are suspended, and all the normative requirements imposed by conservancy legislation are downscaled to the grassroots level. Also the cooperatives are integrated into the new resource management scheme as sponsors. Decisions on resource management, in contrast, are informed by the requirements of the new extraction scheme. Those who formerly held access rights are transformed into responsible guardians for resource availability.

### **Technology and normativity**

All of the outlined normative-technological co-occurrences uniting cooperative production with the management of the basic natural resource are components of a larger assemblage. The valorization of argan started with the scientific analysis of its chemical properties. Moroccan activists then introduced the technology for the mechanized cooperatives and praised this step as an innovation leading to progress – it connected impoverished rural women to the global market, thus aligning with many configurations so often addressed as win-win scenarios that link nature conservation with poverty alleviation and other positive social impacts (Kelly, 2011).

As described above, technology also has paved the way for bioprospecting and the patenting of argan properties for cosmetic industries (McGown, 2006). Moreover, it should be emphasized that already in the 1980s cosmetic firms had experimented with argan oil ingredients in modern cosmetic products. These first attempts to make use of argan oil in cosmetic products for Western consumers did not materialize in mass production, apparently due to the non-availability of high-quality pure argan oil on the local markets. There is much evidence to suggest that the introduction of modern oil-processing technology in combination with the model of cooperatives and the gradual readjustment of the natural resource to market interests was inspired from the beginning by the demand for pure oil by multinational enterprises.

The next level of technological norm generation emanated from those technologies that are employed to identify and make use of genetic and molecular properties. This is the second arena where intellectual property claims are renegotiated and knowledge regimes balanced against benefit-sharing models. This level of technology, in contrast to the research on genetic optimization of the argan tree, is external to Morocco, as is the discourse on the normative configuration of a benefit-sharing model regulating the flow of genetic material from developing countries to the industrialized world in exchange for transfer of a share of the profit (see CBD on the Nagoya Protocol; for argan see INRA, 2013; Lybbert, 2007).

These two normative strands that I have distinguished – bioprospecting and the ensuing patenting of properties on the one hand and the normative registers regulating the interaction of resource optimization and conservancy politics on the other – converge. These intertwined primary transnational legal templates that are intended to stabilize the livelihood security of the rural poor have proven to be instruments of resource security for the industry. Special attention should be given here to the developing legislative framework for the protection of property rights on identified molecular properties as an intellectual autonomous achievement. This acknowledgement is only possible by reference to particular technologies irrespective of the precise nature of the resource. A crucial point is that patenting presupposes the submission of an invention. This bears the consequence that something labeled traditional cannot be the subject of a patent. Such inherent logic enforces, on the one hand, the reference to tradition and indigeneity as a strategy for the containment of outside influence. On the other hand, the same strategy may also impede innovation and creativity in traditional contexts. However, if the resource is no longer natural but designed in the lab through scientific research for optimal oil production, then local claims to benefit sharing can be subject to challenge. Natural resources can thus be transformed into natural capital by the reduction of biodiversity and specialization and become distinguishable from both natural and multifarious cultural landscapes.

The third strand briefly introduced relates to the legal protection of forest products. Certifications are regarded as measures against biopiracy and patenting. Labels and certificates legally define criteria of distinctiveness by creating ecological and social classifications such as defining organic, bio and eco products and assessing social conditions such as social compatibility, equity and transparency. Technologies allow for the achievement of such standards and become integral components associated with particular products, social classifications and legal framings. However, this protective legislation that endows the commodity chain with transparency refers to the product and appeals to the end consumer. It does not seem to prevent intervention in the ecosystem and the translation of the basic concept of sustainability and nature conservation into resource optimization.

The normative framework presented above thus corresponds with specific registers of knowledge and technologies: the biosphere reserve with zoning and satellite control; the legal concept of labor organization and allocation of property rights corresponding

with oil-processing technology (extruding machines, filtration, etc.); and the legal labels of a fair-traded eco or organic product with certifications and PGI dependent on testing and control technology. Taken together, this package allows for the next scale of normative, science- and technology-based entanglements, namely genetic research and the patenting of properties (based on local knowledge), industrialization, and the invention of new marketable products, pharmaceuticals and cosmetics. In this way the argan tree and its oil become a typical niche product endowed with a complex normative framework that appears perfectly suited to the exploitation of bio-resources.

Two additional consequences of the outlined co-developments need to be mentioned. First, the combination of argan oil bonanza with reforestation measures contributed to a tremendous increase in resource competition; not only because the rapid rise in price of argan fruits has intensified competition among collectors, but also because other patterns of resource exploitation continue to coexist, and the shift in emphasis from access rights to responsibility for sustainable resource management has significantly weakened the position of those in the competitive arena who adhere to the traditionally diversified resource exploitation. Second, argan oil no longer serves as a local staple food; in fact, the local producers themselves can no longer afford it.

## Conclusion

In the debate on neoliberal dispossession, some authors critically assess the potential economic opportunities that may arise for the local population from such processes of disentanglement (Borras and Franco, 2010; Zoomers, 2010). From the data presented I infer that the described techno-legislative configuration does not significantly empower those local people who are entitled to access the argan woodlands to economic self-determination and self-reliance. Instead, market integration appears to negatively affect their full exploitation rights. Because of their knowledge and skills they are necessarily integrated into the oil processing and are encouraged to provide the new transnational market with raw material, a strategy that is defined as sustainable and solidary and accompanied by the establishment of an overall audit technology. Harvey (2003) emphasized that the legal protection of intellectual property in conformity with market requirements – which in the case study is extracted from local knowledge – also involves the control of the capital over common property resources, a process that quite often takes shape as techno-legal co-occurrence.

It has been shown that the organization of production in cooperatives may be as much a result of neoliberal politics of resource extraction as it is due to the economy of solidarity. The cooperatives have been established in a top-down approach and thus cannot be regarded as an example of a self-organized, counter-hegemonic alternative development, as described by authors such as Santos (2006). They allow the technological upgrading of resource processing in line with the demands of the industry.

What also becomes apparent when the infrastructural design is included in the analysis is a strategic alliance formation and cooperation within profit-making networks that transcend all scales. In the end, as is so often described in the literature (Kelly, 2011; Zoomers, 2010), the beneficiaries appear as benefactors. Ethical and moral dimensions are anticipated and normatively connected to the technological innovations allowing for global capitalization. Factual dispossession appears in the form of local empowerment: integration into an economy of solidarity; environmental protection of a unique ecosystem and the promotion of its sustainable use; human rights and gender rights compatibility as well as integration into civic society.

Weaving these diverse strands together, this case study illustrates the emergence of a niche commodity on the world market as original and traditional. As a consequence thereof, creeping disenfranchisement of the local population is taking place, based on the combination of legal tools and technology, as in the case of cooperatives; the creation of a standard argan tree for reforestation to meet the industrial demand; and the development of a general product image that responds to consumer expectations. All of this is expressed in a confluence of narratives – in this instance, the environmental and sustainability narrative with a fair-trade, eco-healthy narrative, along with the appropriation of local regimes of knowledge.

The study illustrates that, excluding overt land grab strategies, the first step toward creeping resource appropriation, enhanced by means of normative and technological entanglements, is the separation of local suppliers from access rights and resource control. External investments are not used to acquire forest land but to transform it. The intention here is to show how alternative models may prove quite compatible with a surplus value-absorbing industry, while at the same time they may appear to stand for something else. The argan woodlands have become a laboratory that delivers the source product for other, external laboratories. And it is the newly invented products that capture the market.

### Notes on contributor

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